Invitation for Proposals for NASA GSFC's Small to Medium Sized Museums Workshop (SMMW)

National Aeronautics and Space Administration

NASA's Goddard Space Flight Center (GSFC) is seeking proposals for participation in NASA's Network of Small and Medium Size Museums Workshop: Engineering Enabling Science, August 19-21, 2015.

NASA's Goddard Space Flight Center is home to the nation's largest organization of combined scientists, engineers and technologists that build spacecraft, instruments and new technology to study Earth, the sun, our solar system and the universe. In 2010, NASA GSFC hosted its first successful museum workshop for small to medium size museum educators. The intentional focus on small and mid-sized institutions recognized and acknowledged that many of these institutions serve as anchors in their communities to provide STEM opportunities otherwise not available for students and the public. These often-overlooked institutions have an immense impact on their communities by providing fun learning environments and opportunities to showcase a variety of STEM careers and topics. These institutions may also have limited staffing and budgets and are very much deserving of professional development opportunities. GSFC therefore wanted to provide these museum educators with opportunities to enhance their own programming using resources provided through NASA GSFC.

The aim of the 2015 Network of Small and Medium Size Museums Workshop is to continue to support an ongoing successful, committed, and sustainable partnership for museum educators between NASA GSFC Engineering, Science and Education divisions and small to mid-size science centers and museums throughout the United States by providing these institutions with the opportunity to explore how they can incorporate the latest in NASA GSFC science, engineering and technology discoveries into their institutions through exhibit design and program development. The ultimate goal of this annual program is long-term partnerships where these institutions have a pipeline to the latest NASA STEM content and education resources in addition to creating a network of communication between participants.

The 2015 workshop will be held **August 19-21** at NASA GSFC Wallops Flight Facility (WFF) on Wallops Island, Virginia with online components before and after the workshop. The theme for this year's workshop will be **Engineering Enabling Science** where the focus will look at how engineering is infused within NASA GSFC's different science divisions and suborbital science research and how museums can incorporate these topics, concepts, and missions into their programming, exhibits, and community. To strengthen the relationship between GSFC and these institutions, GSFC will provide an honorarium of $2000 to each institution to establish a new exhibit, exhibit component, new program, or refresh an existing program that promotes NASA GSFC unique content with a target audience of middle school students in mind. The program or exhibit component should also aim to reach underserved groups within their audience through STEM engagement. Programs and projects proposed by the institutions should reflect the integral part engineering plays in all of NASA GSFC's divisions, missions, and projects (see Appendix C for information on GSFC unique content for science and engineering divisions as well as related missions). In addition, proposals should also consider how their project and proposal would have a positive impact on their institution and community as well as NASA GSFC (please see Appendices A and B for detailed information on NASA's GSFC, WFF, and the Office of Education) in a sustainable, long-term partnership.

In addition, successful proposals will receive a $500 stipend to assist with travel, lodging, and daily per diem. Limited space may be available for participants who wish to fund their participation.

Small and Mid-Size Museum Eligibility

An applicant's eligibility for the 2015 Small to Medium Sized Museums Workshop will be based on the criteria listed below in addition to material presented within the proposal (as cited from the American Alliance for Museums Continuum for Excellence; http://www.aam-us.org/resources/assessment-programs/MAP/eligibility). Applications will then be evaluated for those that best match the goals and criteria of the workshop as described in this invitation. Additional resources to assist in determining eligibility can be found at the following websites:

- AAM Small Museums http://www.aam-us.org/about-us/what-we-do/small-museums
- Museum Evaluation http://www.imls.gov/assets/1/assetmanager/mfaeval_report.pdf (see "Exhibit I-3")

The institution must:

- Meet AAM and IMLS wording and accepted standards of a small to medium size museum with staff and operating budget considerations (for receipt of honorarium funding).
- Be organized for educational or aesthetic purposes.
- Own or use tangible objects and exhibit these objects on a regular basis through facilities it owns or operates.
- Have at least one staff member or the full-time equivalent, paid or unpaid, whose responsibilities relate solely to the museum's services and operations.
- Be open and provide museum services to the public at least 90 days in the current or preceding year.
- Be located in the U.S., including Puerto Rico, Guam, American Samoa, the Virgin Islands, the Northern Mariana Islands, the Marshall Islands, Micronesia and Palau.

Space is limited to 20 participants, preferably teams of museum educators from the same institution. Preference will be given but is not limited to educators of small-and medium-sized museums/science centers within the Northeast U.S. (GSFC Service area). However, additional space may be available for participants who wish to fund their participation.

Participant Commitments

Selected applicants will commit to the following:

- Scheduled performance and progress reporting as well as program follow-up (dates to be provided to selected applicants)
- Participation in pre and post workshop components
- Workshop attendance
- Completion of draft for proposed program by workshop date
- Final project description and corresponding plans (if project will not be implemented before this date) by September 21, 2015
- Project implementation and reporting completed by December 15, 2015

Proposal Elements

Proposals should include, but are not limited to, the information listed in the proposal application form. Information and resources to assist in preparation of proposals can be found in the appendices.

Small and Mid-Size Museum Proposal Review and Selection

Proposals will be reviewed and selected based on the following:

- Eligibility based upon the criteria as cited from the American Alliance for Museums Continuum for Excellence
- Proposal requirements demonstrates a high quality plan and design to incorporate the latest in NASA science, engineering and technology discoveries into their institutions through exhibit design and program development
- Proposal requirements demonstrates sustainability and a long-term partnership for continuing exploration and incorporation of the latest NASA STEM content and education resources in their institutions.

Application Process

Proposals will be accepted electronically via email or regular mail. Proposals are due by the end of the business day on **June 1st**. Mailed proposals must be postmarked by **June 1st**. Accepted participants will be notified starting **July 1st**.

For additional information and technical assistance, please contact Amanda Harvey via the contact details listed below.

If you would like to submit a proposal and participate in this workshop and need reasonable accommodation, please contact Amanda Harvey via the contact details listed below for assistance.

Proposals submitted to:

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Education Coordinator, CP4SMP+
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http://www.nasa.gov/centers/goddard
Office of Education, Code 160

Appendices

Appendix A: NASA Goddard Space Flight Center and Wallops Flight Facility
Appendix B: NASA and Goddard Space Flight Center Office of Education
Appendix C: NASA Mission Directorates at GSFC

Appendix A: NASA Goddard Space Flight Center and Wallops Flight Facility

NASA's Goddard Space Flight Center

NASA's Goddard Space Flight Center is home to the nation's largest organization of combined scientists, engineers and technologists that build spacecraft, instruments and new technology to study Earth, the sun, our solar system and the universe. Named for American rocketry pioneer Dr. Robert H. Goddard, the center was established in 1959 as NASA's first space flight complex.

Goddard and its several facilities (Goddard Institute for Space Studies, Wallops Flight Facility, Independent Verification and Validation Facility, and White Sands Test Facility) are critical in carrying out NASA's missions of space exploration and scientific discovery and technology development. We are the only center capable of completing projects from end to end—meaning that we can design, build, test, and launch from our facilities.

Additional information about Goddard Space Flight Center can be found at: https://www.nasa.gov/centers/goddard/home/

GSFC's Wallops Flight Facility

Wallops Flight Facility (WFF) is located on Virginia's Eastern Shore. Wallops is NASA's principal facility for management and implementation of suborbital research and special orbital programs. WFF is NASA's only owned and operated launch range and research airport. It is a vital national asset and is one of only four locations in the United States from where the nation launches payloads into orbit. NASA's suborbital research carriers managed by WFF include piloted aircraft, unmanned aerial systems (UAS), sounding rockets, scientific balloons, and Cubesats for NASA scientific and technology development investigations. WFF's suborbital and research range activities date from the earliest days of the Agency, with thousands of aircraft, sounding rocket, and balloon missions conducted since the early 1960s.

Additional information about Wallops Flight Facility can be found at:
http://www.nasa.gov/centers/wallops/home/

Appendix B: NASA and Goddard Space Flight Center Office of Education

NASA Education

NASA's education programs inspire interest in science, technology, engineering and mathematics (STEM) among America's youth and have a positive impact on the number of students who are proficient in STEM and choose to pursue careers in STEM fields. NASA increases the pool of future STEM workers, thus contributing to the workforce of the future by attracting and retaining students in STEM disciplines. With these efforts in STEM education, NASA helps the United States remain globally competitive and sustain a strong national economy. NASA Education accomplishes its mission through mutually beneficial relationships with over 500 colleges and universities, hundreds of elementary and secondary schools and school districts, and over 400 museums and science centers. NASA works through communities of practice to identify content areas and special events that supplement programming offered by informal education organizations. These relations help provide educational experiences that engage Americans in NASA's mission, while building strategic partnerships that promote STEM literacy.

Additional information about NASA education programs can be found at:
http://www.nasa.gov/audience/foreducators/

GSFC's Office of Education

The Office of Education at GFSC takes NASA content and uses the interest that people have in space as a motivation toward learning the science. We are focused on a continuum of development for students from Pre-K to Post-doctoral fellows that begins with inspiration then engagement then education and moves towards workforce development.

GSFC Education is driven by the NASA agency Education Vision "To advance high quality Science, Technology, Engineering, and Mathematics (STEM) education using NASA's unique capabilities." This vision ensures that GSFC education is thoroughly grounded in the work of NASA through its Mission Directorates and its unique missions, projects, engineering, and IT providing unique educational experiences to learners, educators, and institutions through **four lines of businesses (LOB):**

- ***NASA Internships, Fellowships and Scholarships (NIFS):*** Investing in NASA's workforce of tomorrow through competitive awards and financial assistance that provides students pursuing STEM careers real world learning opportunities today.
- ***Educator Professional Development (EPD):*** Training and supporting educators who play a key role in nurturing NASA's future STEM pipeline through face to face weeklong institutes, partner delivered workshops, on-line and distance learning opportunities, and community responsive programs that shows GSFC also exists within a community—local, state, and regional.
- S***TEM Engagement (SE):*** Opportunities that are designed to increase learners' of all ages involvement and interest in NASA STEM, educate them on the value of STEM in their lives by connecting them to NASA-unique resources through public events in collaboration with the Office of Communications, experiential learning opportunities and NASA challenges.
- ***Institutional Engagement (IE):*** Building the academic and NASA-related STEM research capacity of institutions as prime partners with NASA to support and sustain STEM education efforts focused on increasing minorities and underrepresented communities participation in the future work of NASA.

Additional information about Goddard's education programs can be found at:
http://www.nasa.gov/centers/goddard/education/

Appendix C: NASA Mission Directorates at GSFC

NASA's four mission directorates work to advance global understanding of the systems and processes on our planet, in our atmosphere, and in the cosmos. The core tenet of NASA's existence is to spread our accumulated information for the benefit of humankind. As we work towards making our processes even more open, we are striving to create even more opportunities for public participation and collaboration.

A basic understanding of the goals and objectives of each NASA mission directorate are as follows:

Aeronautics Research

NASA's Aeronautics Research Mission Directorate works to solve the challenges that still exist in our nation's air transportation system: air traffic congestion, safety and environmental impacts.

Human Exploration and Operations Mission Directorate

The Human Exploration and Operations Mission Directorate provides the Agency with leadership and management of NASA space operations related to human exploration in and beyond low-Earth orbit.

Science

NASA's Science Mission Directorate and the nation's science community use space observatories to conduct scientific studies of the Earth from space to visit and return samples from other bodies in the solar system, and to peer out into our Galaxy and beyond.

Space Technology

The Space Technology Mission Directorate is responsible for developing the crosscutting, pioneering, new technologies and capabilities needed to achieve NASA's current and future

Additional information about each of NASA Mission Directorates can be found at:
NASA Mission Directorates Homepage http://www.nasa.gov/about/directorates/

Of NASA's four main mission directorates, GSFC works primarily within the **Science Mission Directorate (SMD)** focusing on ***Sciences & Exploration*** (Astrophysics, Heliophysics, Earth Science, and Planetary Science) and ***Applied Engineering & Technology***. Within these directorates are many different avenues of research all relating back to the Science Mission Directorate from which they stem.

Additional information on the Science Mission Directorate can be found at: http://science.nasa.gov/.

Engineering

NASA's Goddard Space Flight Center is home to the nation's largest organization of combined scientists, engineers and technologists that build spacecraft, instruments and new technology to study the Earth, the sun, our solar system, and the universe. The largest organization at Goddard is the Applied Engineering and Technology Directorate (AETD). AETD is home to approximately 1,300 engineers who provide multidiscipline engineering expertise to our many missions. Goddard is a major laboratory for developing and operating unmanned scientific spacecraft. Goddard provides end-to-end science mission operation. At Goddard and within Engineering, we design missions, build satellites and instruments, operate and control spacecraft, and acquire and distribute data to the world-wide science community. Our data products are used to conduct research in Earth and Space Sciences that benefit both the nation and the world.

As a big picture, the Applied Engineering and Technology Directorate (Code 500) is made up of 5 divisions that support the mission lifecycle of all Goddard missions.

The Divisions are:

540 - Mechanical Systems Division
550 - Instrument Systems and Technology Division
560 - Electrical Engineering Division
580 - Software Engineering Division
590 - Mission Engineering and Systems Analysis Division

Additional information about Goddard's Applied Engineering and Technology Directorate (AETD) can be found at: http://aetd.gsfc.nasa.gov/about.html

Heliophysics

The Heliophysics Science Division conducts research on the Sun, its extended solar-system environment (the heliosphere), and interactions of Earth, other planets, small bodies, and interstellar gas with the heliosphere. Division research also encompasses geospace -- Earth's uppermost atmosphere, the ionosphere, and the magnetosphere -- and the changing environmental conditions throughout the coupled heliosphere (solar system weather).

Scientists in the Heliophysics Science Division develop models, spacecraft missions and instruments, and systems to manage and disseminate heliophysical data. They interpret and evaluate data gathered from instruments, draw comparisons with computer simulations and theoretical models, and publish the results. The Division also conducts education and public outreach programs to communicate the excitement and social value of NASA heliophysics.

The Heliophysics Science Division at Goddard has the highest concentration of content, data, and subject matter experts to study this connected sun-Earth-heliosphere system. It also has a modeling center that detects and predicts space weather to protect NASA assets. Missions and research projects include, but not limited to, the Van Allen Probes, the Solar Dynamics Observatory (SDO), Magnetospheric Multiscale Satellites (MMS), sounding rockets, and CubeSats. Sample informal education programs include Sun-Earth Days, Sunday Experiment, Aurorasaurus, and the 2017 total solar eclipse.

Additional information about Goddard's Heliophysics Science Division can be found at: http://science.gsfc.nasa.gov/sed/index.cfm?fuseAction=home.main&navOrgCode=670&navTab=nav_about_us

Earth Science

The Earth Sciences Division at NASA Goddard Space Flight Center plans, organizes, evaluates, and implements a broad program of research on our planet's natural systems and processes. Major focus areas include climate change, severe weather, the atmosphere, the oceans, sea ice and glaciers, and the land surface. To study the planet from the unique perspective of space, the Earth Science Division develops and operates remote-sensing satellites and instruments. Researchers analyze observational data from these spacecraft and make it available to the world's scientists. Current missions include, but are not limited to, Global Precipitation Measurement, Soil Moisture Active Passive, Aura, ICESat 2, IceBridge, Aquarius, Hurricane and Severe Storm Sentinel, and many more.

Additional information about Goddard's Earth Sciences Division can be found at: http://science.gsfc.nasa.gov/sed/index.cfm?fuseAction=home.main&navOrgCode=610&navTab=nav_about_us

Planetary Science

The Solar System Exploration Division conducts theoretical and experimental research to explore the solar system and understand the formation and evolution of planetary systems. Laboratories within the Division investigate areas as diverse as astrochemistry, planetary atmospheres, extrasolar planetary systems, earth science, planetary geodynamics, space geodesy, and comparative planetary studies. The researchers participate in planetary and earth science missions; collect, interpret, and evaluate measurements; and publish conclusions based on this research. The Division archives and disseminates the data, provides expert user support, and offers education and public outreach programs about the Division's science missions and services. Current missions include, but are not limited to, the Lunar Reconnaissance Orbiter, MAVEN, Mars rover Curiosity, OSIRIS-REx, Cassini, and Juno.

Additional information about Solar System Exploration Division can be found at:
http://science.gsfc.nasa.gov/sed/index.cfm?fuseAction=home.main&navOrgCode=690&navTab=nav_about_us

Astrophysics

NASA Goddard's Astrophysics Science Division (ASD) conducts a multi-messenger program of astrophysics research that includes nearly the entire electromagnetic spectrum along with the study of cosmic rays and gravitational radiation. Our researchers participate in all phases of the cycle of technology development and scientific pursuits as they relate to studying the universe beyond our Solar System. This includes technology design and testing, mission planning and development, data archiving and processing, and scientific studies and publications.

Researchers within the ASD study a wide range of objects near and far. Nearby objects include stars at all stages in their lifecycle, from star-forming regions to stars in the height of their life, from planetary nebulae and the white dwarf at their center to supernova explosions and the resulting neutron star or black hole. Members of our division research galaxies of all sizes at all distances, the nature of dark matter, dark energy, and even space time itself. Others are looking for planets outside our solar system that may harbor life.

In addition to these scientific and engineering pursuits, the ASD also offers a variety of resources to help students, educators, and the public get a behind-the-scenes look at how and why NASA studies the universe. The Imagine the Universe website provides background information and standards-aligned curricula for classroom educators about a variety of astrophysics topics. The ASD also provides a variety of informal education curricula geared towards different audiences - Afterschool Universe (for middle school students), NASA Family Science Night (for entirely families to learn together), and Big Explosion and Strong Gravity (for scouts or other community groups).

Additional information about Goddard's Astrophysics Science Division can be found at:
http://science.gsfc.nasa.gov/sed/index.cfm?fuseAction=home.main&navOrgCode=660&navTab=nav_about_us